REMARKS

This Amendment responds to the Office Action dated June 29, 2006 in which the Examiner rejected claims 1-3, 5-6, 8-9, 11-12, 14-15 and 17-18 under 35 U.S.C. §103.

As indicated above, claims 1, 5, 8, 11, 14 and 17 have been amended in order to make explicit what is implicit in the claims. The amendment is unrelated to a statutory requirement for patentability.

Claim 1 claims an image processor, claim 5 claims a method of image processing and claim 8 claims a recording medium to be executed by a computer storing a program. The image processor, method and program include first and second decision controllers, and a color decision controller. The first decision controller decides whether input color gradation value of a target pixel exists in first ranges. The second decision controller decides whether differences between color gradation value of the target pixel and those of pixels adjacent thereto exist in second ranges different from the first ranges. The color decision controller decides that the target pixel has a specified color when the first decision controller decides that the color gradation value of the target pixel exist in the first ranges and the second decision controller decides that the differences exist in the second ranges.

Through the structure and method of the claimed invention calculating a difference between pixel gradation values themselves, as claimed in claims 1, 5 and 8, the claimed invention provides an image processor, method and program which can detect a specific color and pattern with high precision. The prior art does not show, teach or suggest the invention as claimed in claims 1, 5 and 8.

Claim 11 claims an image processor, claim 14 claims a method of image processing and claim 17 claims a recording medium to be executed by a computer storing a program. The image processor, method and program include first and second decision controllers, and a color decision controller. The first decision controller decides whether input color gradation value of the target pixel exist in first ranges. The second decision controller performs calculation on the input color gradation value of the target pixel in linear operation of a plurality of color component values and decides whether results of the calculation exist in second ranges different from the first ranges. The color decision controller decides that the target pixel has a specific color when the first decision controller decides that the color gradation value of the target pixel exist in the first ranges and the second decision controller decides that the results exist in the second ranges.

Through the structure and method of the claimed invention calculating an input color gradation value of a target pixel in linear operation of a plurality of color component values, as claimed in claims 11, 14 and 17, the claimed invention provides an image processor, method and program which can detect a specific color and pattern with high precision. The prior art does not show, teach or suggest the invention as claimed in claims 11, 14 and 17.

Claims 1, 5, 8, 11, 14 and 17 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* (U.S. Patent No. 6,219,382) in view of *Sonoda et al.* (U.S. Patent No. 6,115,494).

Kikuchi et al. appears to disclose a system for detecting a change in scenes (a scene change) represented by a moving picture signal. (Column 1, lines 9-11). In the fifth embodiment, the step 207 compares the before-and-behind similarities

BVC(N, k) with a threshold value ΘJUD1. The threshold value ΘJUD1 is equal to or different from the threshold value ΘJUD. For every block position corresponding to a before-and-behind similarity BVC equal to or greater than the threshold value ΘJUD1, the step 207 sets the related correlation value to the before-and-behind similarity BVC. For every block position corresponding to a before-and-behind similarity BVC smaller than the threshold value ΘJUD1, the step 207 sets the related correlation value to the corresponding forward similarity BVF. In the step 208, a block position corresponding to a before-and-behind similarity BVC is judged to be an effective-block position. (Column 20, lines 30-45).

Thus, *Kikuchi et al.* merely discloses at column 20, lines 30-45 calculating a difference between of histogram frequencies (or calculation of the different number of pixels) between a target frame and a preceding frame of a moving picture. Nothing in *Kikuchi et al.* shows, teaches or suggests calculating a difference between pixel gradation values themselves, as claimed in claims 1, 5, 8, 11, 14 and 17. Rather, *Kikuchi et al.* merely discloses calculating a difference of histogram frequencies or number of pixels between a target frame and a preceding frame.

Furthermore, *Kikuchi et al.* merely relates to an algorithm for detecting a scene change in a moving picture. Nothing in *Kikuchi et al.* shows, teaches or suggests extracting a specific pattern as claimed in claims 1, 5, 8, 11, 14 and 17. Rather, *Kikuchi et al.* is merely directed to searching for a scene change in a moving picture.

Sonoda et al. appears to disclose an image processing method and device optimally suited to prevent the read-out or printing of documents which may not legally be copied, such as bank notes, negotiable securities or top secret documents,

as well as a copier, scanner or printer in which it is installed. (Column 1, lines 6-10). FIG. 5 shows the overall configuration of such an image processing device. In this example, the device is installed in a full-color copy machine. When someone uses the copy machine to try to copy a non-reproducible document such as a bank note, the image processing device detects this and interrupts the copying process. As can be seen in the drawing, the image data read by the image sensor in the copy machine are transmitted to image input unit 12 (a buffer IC) in image processing device 10. As these image data are scanned by an image sensor such as a CCD, they are transmitted successively in real time, region by region, to the image processing device. The actual data which are sent are 8-bit color data for each of the red (R), green (G) and blue (B) components. The RGB color signals pass through image input unit 12 and are transmitted to binary processing unit 13. The binarized image data (i.e., a binary image) are stored in storage device 14. The binary image stored in device 14 is sent to mark location detection unit 15. The marks 2 constituting pattern 1 are extracted from the binary image, their locations are specified, and they are stored in storage device 16. Everything before device 16 constitutes the aforesaid unit to detect the marks. The data representing the locations of marks 2 which are stored in device 16 are transmitted to pattern location matching unit 17. A window of a specified shape and size is used to determine how well the locations of the marks match a specified arrangement (i.e., the arrangement constituting pattern 1 (see FIG. 1)). The result of this determination is transmitted to goodness output unit 18. If the goodness of fit received by goodness output unit 18 exceeds a given value, a signal indicating that the pattern has been detected is output to the copy machine. Binary processing unit 13 consists of mark shape

extraction unit 13a, mark color extraction unit 13b and AND element 13c, which finds the logical product of the outputs of units 13a and 13b. A single color component signal with a high density, whichever of the RGB signals is best suited to extracting the mark, is sent to mark shape extraction unit 13a. The other color component signals, or, alternatively, all the color component signals, are sent to mark color extraction unit 13b. The marks we detected in this example are yellow, so the B signals are sent to mark shape extraction unit 13a. (Column 10, lines 20-65). Mark color extraction unit 13b uses a 4-bit window comparator because printed materials in general suffer from extreme non-uniformity (variation) of color. Higher color resolution would be pointless. However, as pattern recognition requires accuracy, mark shape extraction unit 13a uses an 8-bit comparator, as mentioned above. Separating pattern recognition from color extraction in this way allows us to extract the mark accurately and absorb errors due to variation among the component colors constituting the mark so that the mark can be specified correctly. (Column 11, lines 25-35).

Thus, *Sonoda et al.* merely discloses separating pattern recognition from color extraction to a extract a mark. Nothing in *Sonoda et al.* shows, teaches or suggests calculating a difference between pixel gradation values as claimed in claims 1, 5, 8, 11, 14 and 17. Rather, *Sonoda et al.* separates pattern recognition from color extraction in order to allow extraction of a mark accurately.

Since neither *Kikuchi et al.* nor *Sonoda et al.* show, teach or suggest calculating a difference between pixel gradation values as claimed in claims 1, 5, 8, 11, 14 and 17, Applicants respectfully request the Examiner withdraws the rejection to claims 1, 5, 8, 11, 14 and 17 under 35 U.S.C. §103.

Claims 2, 3, 6 and 9 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* in view of *Sonoda et al.* and *Mutoh et al.* (U.S. Patent No. 6,631,210). Claims 12, 15 and 18 were rejected under 35 U.S.C. §103 as being unpatentable over *Kikuchi et al.* in view of *Sonoda et al.* and *Kuwata et al.* (U.S. Patent No. 6,151,410).

Applicants respectfully traverse the Examiner's rejection of claims 2-3, 6, 9, 12, 15 and 18 under 35 U.S.C. § 103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in the combination of *Kikuchi et al.* and *Sonoda et al.* show, teach or suggest the primary features as claimed in claims 1, 5, 8, 11, 14 and 17, Applicants respectfully submit that the combination of the primary references with the secondary references to *Mutoh et al.* and *Kuwata et al.* would not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 2-3, 6, 9, 12, 15 and 18 under 35 U.S.C. §103.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

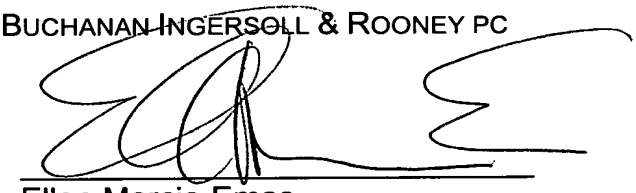
If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: September 26, 2006 By: 

Ellen Marcie Emas
Registration No. 32131

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620